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GB 866910
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(54) A railway goods truck for transporting heavy rolls and bales

(57) The truck has a plurality of pivotal flaps 7 which, when they are all in their lowered (horizontal) positions, constitute a flat load-carrying surface. Each flap can be raised into and locked in a vertical attitude by catches which engage a holding device 11 which itself carries crank levers which keep the holding device raised. The holding devices can be lowered when not needed. The flaps, when raised, reveal transverse load-accommodating troughs which can be of different sizes.

Each trough has arms 14 which are movable transversely of the truck from the outside towards the truck centre-line in order to engage racks such as will maintain the arms in selected angular settings to the horizontal. The arms, when erected, prevent the load in a trough from moving transversely of the truck.

The holding devices and the arms when lowered all lie below the flaps when the flaps are horizontal.

Fig. 2

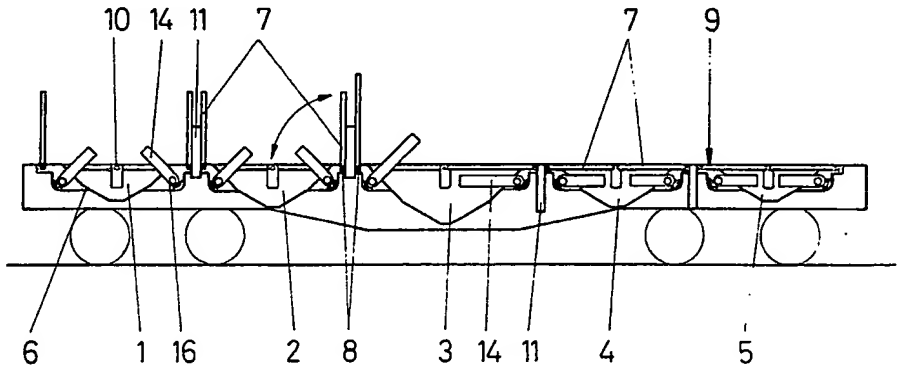

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Fig. 1

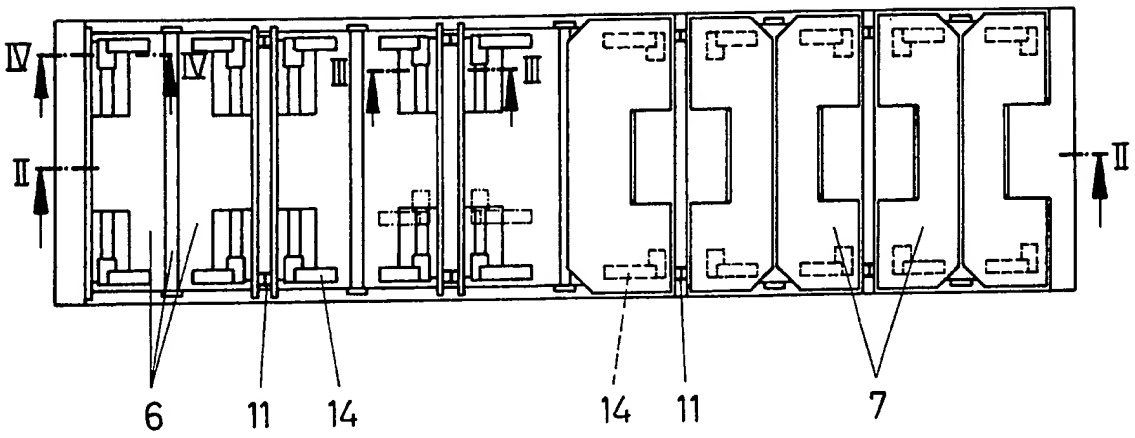


Fig. 2

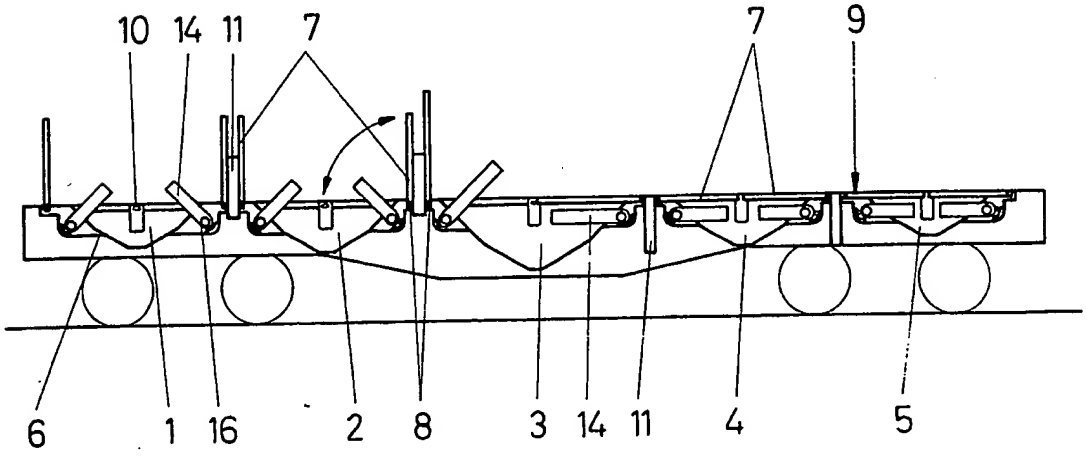


Fig. 3

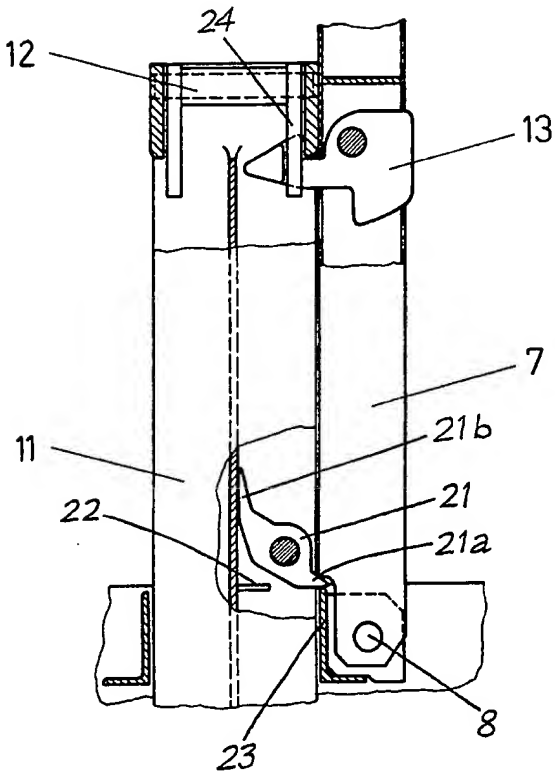


Fig. 4

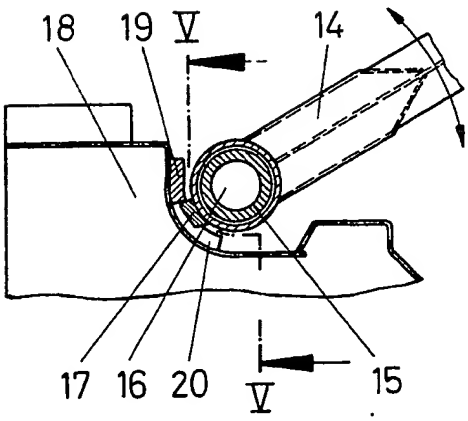
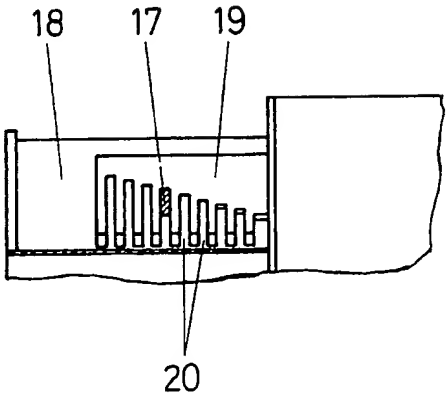


Fig. 5



SPECIFICATION

A railway goods truck for transporting heavy rolls and bales

This invention concerns a railway goods truck for transporting, for example, heavy rolls of sheet metal and/or bales of material.

A railway goods truck is known from German Patent Specification No. 1,605,031 in which troughs which act as the supports for rolls of sheet metal are formed by individual pairs of hinged flaps, the flaps being made to the same design and the same dimensions for the entire load-carrying surface and thus, when swivelled about their hinges, forming identical troughs. Given that the flaps have to take the vertical forces arising from the weight of the rolls of sheet metal and their horizontal deceleration and acceleration forces and to transmit these to the truck subframe, the flaps together with their locking systems and pivot bolts and so on have to be particularly strongly made, which inevitably means a reduction in the load capacity as the permissible gross weight of the truck is determined by the axle load. The provision of identical troughs can produce uneven axle loading if rolls of sheet metal of larger diameter are placed nearer to one end of the truck since the choice of trough is left to the loader. Moreover, placing the rolls of sheet metal in troughs certainly affords a certain amount of protection against movement by said rolls longitudinally of the truck but none against transverse movements as is necessary when trucks are conveyed on ferries in heavy weather. Lastly, no protection is afforded against either longitudinal movement or transverse movement on the load-carrying surface when transporting baled goods.

The principle object of the present invention is therefore to design a railway goods truck which eliminates these drawbacks.

Accordingly, the present invention consists in a railway goods truck having troughs each of which comprises two trough walls which extend transversely of the truck and which are generally upwardly inclined in opposite directions to the horizontal, each trough having a pair of flat flaps associated therewith to act as a cover for the trough when said flaps are horizontal and all of said flaps being so arranged as to provide a flat load-carrying surface when all of said flaps are horizontal, each flap being mounted for angular movements about a pivot axis extending transversely of the truck so as to be swung upwardly from its horizontal attitude to a vertical attitude thereof in which it can be held by holding means, each trough wall having associated therewith at each end thereof an adjustable arm which can be swung upwardly out of the horizontal about the axis of a shaft extending transversely of the truck beneath the level of said load carrying surface and which can be locked on said shaft at a desired angle of inclination to the horizontal and in one of a number of locations which are spaced from one another transversely of the truck. Said holding means may include a holding device which is movable upwardly from a lowered position thereof in which the uppermost portion thereof is flush with said load-carrying surface to a raised position thereon in which other portions thereof are engageable by the flap. Said holding means may further include gravity catches which are pivotally mounted on the flap, one at each end of said flap, said catches engaging said other portions of the raised holding device. Said holding means may further include a drop latch or latches which is or are such as to engage the gravity catches automatically when said catches have engaged said other portions of the raised holding device.

Preferably, there is a holding device located between adjacent troughs, whereby in the case of any two adjacent troughs one flap associated with one of said troughs and one flap associated with the other of said troughs engage the respective raised holding device in order to be held thereby in their vertical attitudes. Each holding device is preferably located between two shafts about whose respective axes the respective flaps are angularly movable from their horizontal attitudes to their vertical attitudes and *vice versa.*

Each holding device may have a lifting handle which also serves as a lashing eye through which an elongate load-lashing element can extend.

Said truck will preferably have a truck sub-frame comprising spaced parallel longitudinal members which are connected to one another by spaced transverse members which are parallel to one another and to the axles of the wheels of the bogies of the truck, each flap resting on and bridging said longitudinal members when it is in its horizontal attitude.

Each adjustable arm is preferably secured to a bush which encircles the shaft about whose axis said adjustable arm is angularly movable, said bush carrying a lug which projects radially from said bush in a direction opposite to that in which said adjustable arm extends and said lug being engageable in a comb-like rack. Said rack may have slots which are uniformly spaced apart in the horizontal direction transversely of the truck, the lengths of said slots decreasing linearly from one end of the rack to the other.

The present invention will now be more particularly described with reference to the accompanying diagrammatic drawings which illustrate one embodiment by way of example only and in which:—

Figure 1 shows a plan view of a load-carrying surface of a railway goods truck according to the present invention;

Figure 2 shows a longitudinal section taken along the line II-II in Figure 1;

Figure 3 shows a section taken along the line III-III in Figure 1 and drawn to an enlarged scale;

Figure 4 shows a section taken along the line IV-IV in Figure 1 and drawn to an enlarged scale; and

Figure 5 shows a section taken along the line V-V in Figure 4.

Referring to the drawings, there is illustrated a railway goods truck which comprises troughs 1 to 5 which are approximately equidistantly arranged and which extend transversely of the truck (namely, at right angles to the direction of travel of said truck)

under a load-carrying surface. Said troughs are disposed between outer longitudinal members of the subframe of the truck and are firmly connected thereto. The troughs have walls 6 which are inclined towards one another and which comprise portions which make angles with one another. In order to be able to convey rolls of sheet metal of different diameter, the trough 3 which is bisected by the transverse median plane of the truck has a greater cross-sectional area than that of each of the troughs 2 and 4 which, for their part, have a greater cross-sectional area than that of each of the troughs 1 and 5. Each of the troughs 1 to 5 has associated therewith a pair of hinged flaps 7 which, when lowered, form a continuous flat load-carrying surface or floor 9, each flap being made in one piece and being flat and being so mounted that it can be swung upwardly and downwardly about the horizontal axis 8 which extends transversely of the truck; said axis is provided by suitable journals in which the flaps are mounted. At least some of the journals lie in the centre of the floor 9 and all of them are positioned at a distance (best seen in Figure 2) from the respective trough wall 6 of the respective trough to be covered. When folded down, each flap rests in a horizontal attitude on the longitudinal frame members and on supports 10 which are provided near each long side of the truck, each of said supports 10 carrying a locking means (not illustrated) operable to hold a single flap 7 or a pair of flaps 7.

The axes 8 of the neighbouring flaps of any two adjacent troughs are spaced so that the flaps are spaced from one another when they are in their raised vertical attitudes. At each side of the truck in the region of the respective longitudinal member, this space between neighbouring flaps accommodates a vertically displaceable holding device 11 which, when locked in its lowered position, sits on a stop (not illustrated) so that the top edge or surface of said holding device is flush with the surface of the floor 9. The holding devices 11 can be drawn upwardly (see left-hand portion of Figure 2) and locked in this position so that they project by a substantial amount above the load-carrying surface 9. A handle 12 (Figure 3), provided in order to facilitate the lifting of the respective holding device, is so formed that it can also serve as a lashing eye for a rope, chain or the like for securing the load.

In order to transport normal loads, the pairs of flaps 7 are folded down into their horizontal attitudes and form said continuous load-carrying surface 9, and the holding devices 11 can be drawn upwardly in order to be used to secure the load. In order to transport large baled items, such for example as baled sheet metal, one flap 7 is raised, this being locked automatically to the holding device 11 by a gravity-influenced catch 13 which is freely pivotal about its pivot axis (Figure 3) so that a partition is formed which prevents the load from sliding longitudinally of the truck. If rolls of sheet metal are to be transported, the holding devices 11 are pulled upwardly and the flaps 7 are raised so that they stand in their vertical attitudes and are held locked in this position against the holding devices by their catches 13. Then, loading will be carried out by the loader placing the rolls on the truck in the optimum manner which will be dictated by the cross-sectional areas of the troughs 1 to 5, the erect flaps serving, by virtue of the distance between the axes 8 and the upper edge of the trough walls 6, as partitions and preventing the rolls of sheet metal from moving longitudinally of the truck. Thus, if the load is to consist of rolls of different diameters, the loader will automatically distribute the rolls in such a manner that the rolls of largest diameter will be placed in the troughs 2, 3, 4 and the small-diameter rolls will be placed in the troughs 1, 5.

In order to prevent baled goods or rolls of sheet metal from moving transversely of the truck on the load-carrying surface 9 or in the troughs 1 to 5, each flap 7 has associated arms 14 which are positioned at each side of the truck close to the outer longitudinal members thereof; said arms 14 can be swung upwardly and downwardly and can lie underneath the flaps (and thus underneath the floor 9) in their lowered horizontal attitudes. As shown in Figure 4, the arm 14 is pivotally mounted and is displaceable, by means of a bush 15 which is attached to said arm, along a horizontal shaft 16 lying at right angles to the direction of travel of the truck and therefore parallel to the axes 8. In order to be able to fix the angle of inclination to the horizontal and also the distance, transversely of the truck, from the load when the arm 14 has been swung upwardly, there is a lug 17 fixed to the bush 15 on the opposite side to the arm 14. There is an associated rack 19 which is secured in a mounting well 18 and in which the lug 17 engages to lock the arm 14; said rack 19 is comblike (Figure 5) in that it has a plurality of uniformly spaced slots 20 the depth of which decreases linearly towards the outside, the breadth of the slots 20 being such that the lug 17 can be introduced without force. The lateral distance of any adjustable arm 14 from the load is adjusted, and at the same time the optimum angle of inclination to the horizontal of said arm is found, by sliding the the bush 15 and the attached arm 14 along the shaft 16 until the lug 17 is in register with the desired one of the slots 20. Of course, when the arm 14 is to be placed in its horizontal attitude, the bush 15 and its lug 17 are moved towards the outside of the truck so as to be clear of the rack 19.

In order to keep the holding device 11 in the pulled-up (raised) position, there is mounted in it a swivellable crank lever 21, whose arms 21a, 21b point in opposite directions and are of different lengths. In the lowered position of each holding device 11, the lever 21 lies in a dead-centre position which is fixed by a stop 22 and a constraint-free vertical movement of the holding device is permitted. When the holding device 11 is raised, the stop 22 has a mechanical impact with the lever 21 and this impact causes the lever 21 to drop from its dead-centre position and to turn in an anticlockwise direction about its pivot axis to an extent which is determined by the different lengths of the arms. In the mounting, there is provided in the area of the short arm 21*a* a cavity or opening through which the short arm 21*a* emerges and becomes supported on the frame 23 which carries the bearing for the journal 8, whereby, as a result of the abutment of the long arm

21*b* against a part of the holding device 11, the crank lever 21 is fixed in this position and the holding device 11 is held in its raised position. In order to lower the holding device 11, the latter is firstly pulled up with the result that the crank lever 21 is turned in a clockwise direction until it butts with its shorter arm 21*a* against the stop 22 and therefore adopts the dead-centre position. The holding device 11 can then be dropped into the lowered position thereof.

Figure 3 also illustrates that a drop latch 24 is provided which positively and automatically engages the respective catch 13 when said catch has engaged the raised holding device 11. It will be appreciated from a study of Figure 3 that the drop latch 24 drops between the pivot axis of the catch 13 and an enlarged nose portion of the catch 13; this will prevent disengagement of the holding device 11 by the catch 13 as a result, for example, of a shunting impact.

CLAIMS

1. A railway goods truck having troughs each of which comprises two trough walls which extend transversely of the truck and which are generally upwardly inclined in opposite directions to the horizontal, each trough having a pair of flat flaps associated therewith to act as a cover for the trough when said flaps are horizontal and all of said flaps being so arranged as to provide a flat load-carrying surface when all of said flaps are horizontal, each flap being mounted for angular movements about a pivot axis extending transversely of the truck so as to be swung upwardly from its horizontal attitude to a vertical attitude thereof in which it can be held by holding means, each trough wall having associated therewith at each end thereof an adjustable arm which can be swung upwardly out of the horizontal about the axis of a shaft extending transversely of the truck beneath the level of said load-carrying surfaces and which can be locked on said shaft at a desired angle of inclination to the horizontal and in one of a number of locations which are spaced from one another transversely of the truck.

2. A truck as claimed in Claim 1, wherein said holding means include a holding device which is movable upwardly from a lowered position thereof in which the uppermost portion thereof is flush with said load-carrying surface to a raised position thereof in which other portions thereof are engageable by the flap.

3. A truck as claimed in Claim 2, wherein said holding means further include gravity catches which are pivotally mounted on the flap, one at each end of said flap, said catches engaging said other portions of the raised holding device.

4. A truck as claimed in Claim 2 or Claim 3, wherein there is a holding device located between adjacent troughs, whereby in the case of any two adjacent troughs one flap associated with one of said troughs and one flap associated with the other of said troughs engage the respective raised holding device in order to be held thereby in their vertical attitudes.

5. A truck as claimed in Claim 4, wherein each holding device is located between two shafts about whose respective axes the respective flaps are angularly movable from their horizontal attitudes to their vertical attitudes and *vice versa*.

6. A truck as claimed in any one of Claims 2 to 5, wherein each holding device has a lifting handle which also serves as a lashing eye through which an elongate load-lashing element can extend.

7. A truck as claimed in any one of the preceding Claims, wherein there is a truck sub-frame comprising spaced parallel longitudinal members which are connected to one another by spaced transverse members which are parallel to one another and to the axles of the wheels of the bogies of the truck, and wherein each flap rests on and bridges said longitudinal members when it is in its horizontal attitude.

8. A truck as claimed in any one of the preceding Claims, wherein each adjustable arm is secured to a bush which encircles the shaft about whose axis said adjustable arm is angularly movable, and wherein said bush carries a lug which projects radially from said bush in a direction opposite to that in which said adjustable arm extends, said lug being engageable in a comb-like rack.

9. A truck as claimed in Claim 8, wherein said rack has slots which are uniformly spaced apart in the horizontal direction transversely of the truck and wherein the lengths of said slots decreases linearly from one end of the rack to the other.

10. A truck as claimed in Claim 3 or in any Claim which is appended to Claim 3, wherein said holding means further include a drop latch or latches which is or are such as to engage the gravity catches automatically when said catches have engaged said other portions of the raised holding device.

11. A railway goods truck constructed, arranged and operable substantially as hereinbefore described with reference to and as illustrated in the accompanying diagrammatic drawings.

12. Any features of novelty, taken singly or in combination, of the embodiment of the invention hereinbefore described with reference to the accompanying diagrammatic drawings.

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